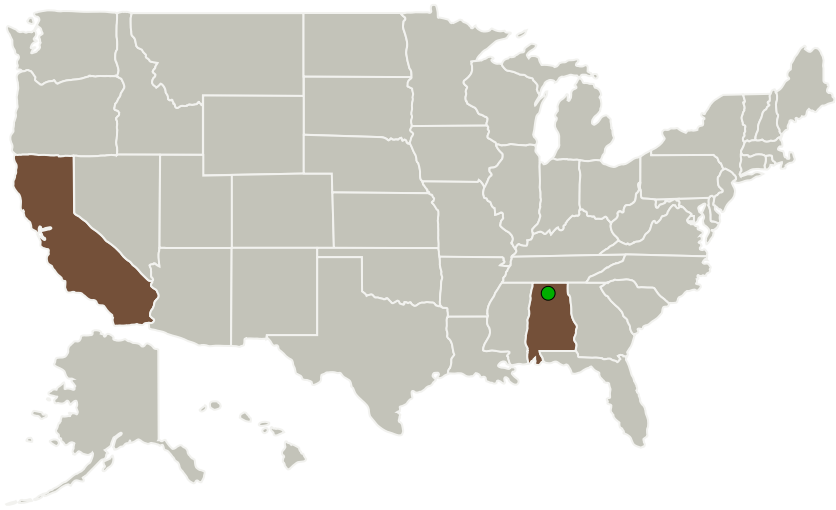
Torch-Augmented Spark Igniter for Nanosat Launch Vehicle LOX/Propylene Rocket Engine, Phase I

Completed Technology Project (2016 - 2017)

Project Introduction

The technical innovation proposed here is the introduction of torch-augmented spark ignition for high performance liquid oxygen (LOX) / propylene rocket engines now in development for a future two-stage nanosat launch vehicle. Spark ignition is critical for reliably achieving multiple in-flight restarts of NLV upper stage engines. In addition, this new capability will generate immediate R&D benefits through the streamlining of ongoing LOX/propylene engine testing. By replacing pyrotechnic charges that are the current state-of-the-art method for LOX/propylene engine ignition, spark igniters eliminate the need to install fresh units after each test attempt (a manually intensive and tedious process). Additional operational benefits from eliminating a category of pyrotechnics and ordnance will accrue in logistics and safety.

Primary U.S. Work Locations and Key Partners



Torch-Augmented Spark Igniter for Nanosat Launch Vehicle LOX/Propylene Rocket Engine, Phase I

Table of Contents

Torch-Augmented Spark Igniter for Nanosat Launch Vehicle LOX/Propylene Rocket Engine, Phase I

Completed Technology Project (2016 - 2017)

Organizations Performing Work	Role	Type	Location
Garvey Spacecraft Corporation	Lead Organization	Industry	Long Beach, California
Marshall Space Flight Center(MSFC)	Supporting Organization	NASA Center	Huntsville, Alabama
University of Alabama in Huntsville(UAH)	Supporting Organization	Academia	Huntsville, Alabama

Primary U.S. Work Locations	
Alabama	California

Project Transitions

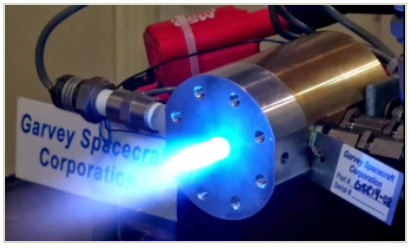
June 2016: Project Start

June 2017: Closed out

Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/139504)*

Images



Briefing Chart Image
Torch-Augmented Spark Igniter for Nanosat Launch Vehicle LOX/Propylene Rocket Engine, Phase I
(https://techport.nasa.gov/image/134527)

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Garvey Spacecraft Corporation

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

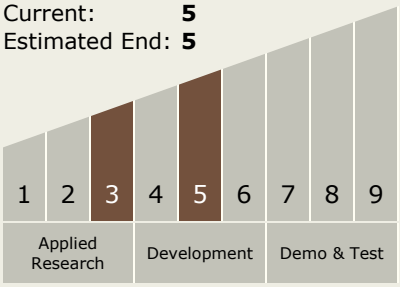
Carlos Torrez

Principal Investigator:

Christopher M Bostwick

Technology Maturity (TRL)

Start: **3**
Current: **5**
Estimated End: **5**



Torch-Augmented Spark Igniter for Nanosat Launch Vehicle LOX/Propylene Rocket Engine, Phase I

Completed Technology Project (2016 - 2017)

Technology Areas

Primary:

- TX01 Propulsion Systems
  - TX01.1 Chemical Space Propulsion
    - TX01.1.2 Earth Storable

Target Destinations

The Moon, Mars, Outside the Solar System, The Sun, Earth, Others Inside the Solar System